

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/01032

FILE COPY

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G02F 1/1335

US CL : 349/16, 96, 113, 115, 175, 176, 195

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 349/16, 96, 113, 115, 175, 176, 195

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
349/16, 96, 113, 115, 175, 176, 195

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,686,979 (Weber et al.) 11 Nov 1997 (11.11.1997), entire document	1-4, 6, 8-14, 24, 28, 29, 38-43 ----- 5, 7, 15-23, 25-27, 30- 37, 44-57
Y	US 5,940,150 A (Faris et al.) 17 Aug 1999 (17.08.1999)	1-57
Y	US 5,111,629 A (Baughman et al.) 12 May 1992 (12.05.1992)	1-57
Y	US 5,322,996 A (Black et al.) 21 June 1994 (21.06.1994) entire document	1-57
Y	US 5,475,213A (Fujii et al.) 12 Dec 1995 (12.12.1995) entire document	1-57
Y	US 4,671,617 (Hara) 9 June 1987 (09.06.1987) entire document	1-57
A	US RE. 36,308 E (Yang) 12 Sept 1999 (12.09.1999) entire document	1-57

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search

20 May 2002 (20.05.2002)

Date of mailing of the international search report

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

SIKES L WILLIAM

Telephone No. (703) 308-0530

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP98/01016

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> Int.Cl <sup>6</sup> C03B33/023		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) Int.Cl <sup>6</sup> C03B33/00-33/14, B24C5/02, B24C5/04		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-1998 Kokai Jitsuyo Shinan Koho 1971-1998 Jitsuyo Shinan Toroku Koho 1996-1998		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 5-253843, A (Shibuya Kogyo Co., Ltd.), October 5, 1993 (05. 10. 93), Claims ; page 2, left column, lines 11 to 14 ; page 2, right column, lines 3 to 12 ; Fig. 2 (Family: none)	1-10
Y	JP, 62-100440, A (Shoda Shoji K.K.), May 9, 1987 (09. 05. 87), Claims ; page 1, lower right column, lines 5 to 8 (Family: none)	1-10
Y	JP, 6-304899, A (Casio Computer Co., Ltd.), November 1, 1994 (01. 11. 94), Claims & US, 5492582, A	1-10
Y	JP, 8-12361, A (Asahi Glass Co., Ltd.), January 16, 1996 (16. 01. 96), Claims ; Fig. 2 (Family: none)	5
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search May 12, 1998 (12. 05. 98)		Date of mailing of the international search report May 26, 1998 (26. 05. 98)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/JP98/01016

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP, 50-80586, A (Western Electric Co., Inc.), June 30, 1975 (30. 06. 75), Claims (Family: none)	8
Y	JP, 7-24736, A (Nippon Steel Corp.), January 27, 1995 (27. 01. 95), Claims ; page 2, left column, lines 10 to 14 ; Fig. 1 (Family: none)	10

## 国際調査報告

国際出願番号 PCT/JP98/01016

## A. 発明の属する分野の分類 (国際特許分類 (IPC))

Int. Cl.<sup>8</sup> C03B33/023

## B. 調査を行った分野

## 調査を行った最小限資料 (国際特許分類 (IPC))

Int. Cl.<sup>8</sup> C03B33/00-33/14Int. Cl.<sup>8</sup> B24C5/02Int. Cl.<sup>8</sup> B24C5/04

## 最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報 1926-1996年

日本国公開実用新案公報 1971-1998年

日本国登録実用新案公報 1994-1998年

日本国実用新案登録公報 1996-1998年

## 国際調査で使用した電子データベース (データベースの名称、調査に使用した用語)

## C. 関連すると認められる文献

引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
Y	JP, 5-253843, A (澁谷工業株式会社) 5. 10月. 1993 (05. 10. 93) 特許請求の範囲, 第2頁左欄第11 -14行, 第2頁右欄第3~12行, 第2図 (ファミリーなし)	1-10
Y	JP, 62-100440, A (庄田商事株式会社) 9. 5月. 1 987 (09. 05. 87) 特許請求の範囲, 第1頁右下欄第5- 8行 (ファミリーなし)	1-10
Y	JP, 6-304899, A (カシオ計算機株式会社) 1. 11 月. 1994 (01. 11. 94) 特許請求の範囲&US, 549 2582, A	1-10

☒ C欄の続きにも文献が列挙されている。☐ パテントファミリーに関する別紙を参照。

## \* 引用文献のカテゴリー

「A」 特に関連のある文献ではなく、一般的技術水準を示すもの

「E」 先行文献ではあるが、国際出願日以後に公表されたもの

「L」 優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献 (理由を付す)

「O」 口頭による開示、使用、展示等に言及する文献

「P」 国際出願日前で、かつ優先権の主張の基礎となる出願

の日の後に公表された文献

「T」 国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの

「X」 特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの

「Y」 特に関連のある文献であって、当該文献と他の1以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの

「&amp;」 同一パテントファミリー文献

国際調査を完了した日

12. 05. 98

国際調査報告の発送日

26.05.98

国際調査機関の名称及びあて先

日本国特許庁 (ISA/JP)

郵便番号100-8915

東京都千代田区霞が関三丁目4番3号

特許庁審査官 (権限のある職員)

前田 仁志



4G

9728

電話番号 03-3581-1101 内線 3417

C (続き). 関連すると認められる文献		
引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
Y	JP, 8-12361, A (旭硝子株式会社) 16. 1月. 1996 (16. 01. 96) 特許請求の範囲, 第2図 (ファミリーなし)	5
Y		8
Y	JP, 50-80586, A (ウェスターン エレクトリック カムパニーインコーポレーテッド) 30. 6月. 1975 (30. 06. 75) 特許請求の範囲 (ファミリーなし)	10
	JP, 7-24736, A (新日本製鐵株式会社) 27. 1月. 1995 (27. 01. 95) 特許請求の範囲, 第2頁左欄第10-14行, 第1図 (ファミリーなし)	